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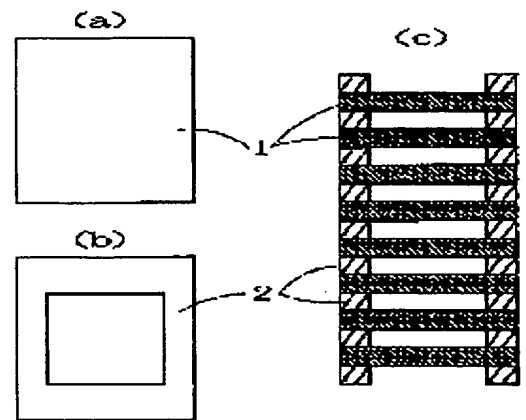
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(54) AUXILIARY PACKAGING TOOL AND PACKAGED BODY

(57)Abstract:

PROBLEM TO BE SOLVED: To eliminate the defects of damaging easily a plate-shaped body in the case of the direct storage into a case with channels and generating the contact of the paper with the hole of the surface in the case of using an interleaving paper at the time of storage, carriage and handling of the thin, fragile plate-shaped body.

SOLUTION: Auxiliary packaging tools 2 are formed by conforming sheet-shaped materials to the outer shape of plate-shaped bodies 1 to be laminated and forming the materials into the shape of being punched leaving only their peripheral edges, and the tools and the plate-shaped bodies are laminated alternately. Channels can be formed on the inner wall of the auxiliary packaging tool 2, and the inside of the upper face of the tool can be formed low so that the plate-shaped bodies 1 are fixed thereon.



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CLAIMS

[Claim(s)]

[Claim 1] An auxiliary implement for a package which is for vacating and piling up a gap, and keeping, conveying and handling weak plates qualitatively of thin, is the sheet-like object of the shape of a frame with narrow width of face which consisted of rigid materials, and has a configuration of a periphery of said plate.

[Claim 2] An auxiliary implement for a package of claim 1 which consists of two or more sheet-like objects which divided a peripheral shape of said plate.

[Claim 3] An auxiliary implement for a package of claim 1 which has a configuration where a sheet of a peripheral shape of said plate stood in a row in a plane since each appearance of two or more plates put in order by plane is covered.

[Claim 4] An auxiliary implement for a package of claim 1 which has a slot for fixing said plate to a wall of said sheet-like object.

[Claim 5] An auxiliary implement for a package of claim 1 with which said sheet-like object is larger than said plate with an implement, and an outside approach portion of the upper surface of said sheet-like object is a high level difference portion from a part for inside approach.

[Claim 6] A part for said lobe is the auxiliary implement for a package of claim 5 located inside a level difference portion with the above have a part for a downward lobe in inside approach of an inferior surface of tongue of said sheet-like object, and expensive.

[Claim 7] A package object which it doubles in a necessity number-of-sheets pile through said auxiliary implement for a package, and said plate is being fixed by fixed means in the whole on an auxiliary implement for a package of either claim 1 - claim 6, and is further characterized by carrying out the seal package of the whole.

[Claim 8] A package object which is contained by case where it has a partition or a slot equivalent to thickness of said polymer after a polymer set [plate / said] in a necessity number-of-sheets pile through said auxiliary implement for a package is fixed by fixed means in the whole if needed on an auxiliary implement for a package of either claim 1 - claim 6, and is further characterized by to carry out the seal package of the whole.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the auxiliary implement for not contacting a plate mutually, and making and piling it up at the time of storage, transportation, and handling of a plate.

[0002]

[Description of the Prior Art] The time of handling of the goods at the time of performing production processes, such as production of goods, and inspection, and in case it keeps a lot of goods or conveys, the need of treating the thing of the same configuration so much often happens on industry. In such a case, as long as there is no trouble expected, goods are piled up as it is in many cases. For this reason, like for example, a paper cup or the tray for a package, what is produced industrially produces the side in the shape of an inverse tapered shape (narrowing the bottom), and is accumulating it so that a pile may become easy beforehand.

[0003] However, even if a pile is an easy configuration, it puts, and is [it is not rich, and] and there is also a case. For example, printing and spreading of a coating are made on the surface, and what has not got dry is not piled up if it remains as it is. For this reason, by general offset printing, it prevented sprinkling starch and pasting up mutually and the method of of "child picking of a reed screen" which places on a drainboard and is repeated is taken by silk screen printing. However, although neither the field printed in these cases nor the painted field can be touched, since touching the opposite side does not interfere, it is touching an convenient side and solution is in drawing.

[0004] Unlike a case which was described above, there is a field which should avoid contact also to a side front also on a background. For example, in electronic parts, such as an orientation side for optical-related components, such as glass, a lens, a photographic filter, a dry plate for photographs, or a photographic film, or a silicone wafer, a photo-mask blank board, a photo mask, or liquid crystal displays, if it touches, contamination or the detailed damage on surface will arise, and the engine performance of those components will be reduced. Moreover, also in food relation, touching the food after manufacture causes adhesion of the bacteria leading to putrefaction or food poisoning, and growth, and it is the same also in medicine or biotechnology relation.

[0005] In addition to problems, such as contamination, detailed damage, and bacterial adhesion and growth, the body itself tends to break and cautions special to a pile may be required. Although overlapped a little, in the product and food which used very thin glass, there is very thin things, such as a rice cracker, chocolate, or a candy, dry soy milk skin, a thing that burned wheat gluten, or a hide of the midst. About these, preventing from touching both sides and consideration which the partial force does not join are required. Conventionally, on the occasion of storage, transportation, and handling of such a thing, the core box plastics case with a slot is used, the slot equivalent to the thickness of the goods which should be contained in the wall of both cases of a core box is formed, tabular goods were fitted over this slot from opening of a box, and the method of by the way taking out one piece at a time which is necessity was taken. However, when it inserts and is easy to be damaged in the case of ejection, even if Mizouchi has since the size of a slot is greatly set up compared with the thickness of goods in order to make a plug and ejection easy, it moves in a goods fang furrow at the time of transportation etc., and neither friction with a slot nor the damage on the goods by collision is avoided.

[0006] Apart from this, in case a colour slide film is covered over a slide projector, there is also an example which sandwiches and uses each piece for the frame of the product made of paper called slide mounting or the product made from plastics. However, since the thing in which the frame of removal which has thickness in the perimeter is possible is attached almost fixed, in processing it further etc., application is difficult.

[0007] Or thin soft paper is used as "interleaving paper" (suiting and carrying out), there is also a method of piling up interleaving paper and goods by turns, and in the viewpoint of immobilization of goods, although there are few problems, the trouble by the thing of both sides of goods referring to the whole surface is not avoided.

[0008]

[Problem(s) to be Solved by the Invention] This invention makes it a technical problem to avoid the trouble by touching all over both sides of goods, when using damage on the goods at the time of using a core box case with the conventional slot and interleaving paper is assumed.

[0009]

[Means for Solving the Problem] in this invention, by applying only to a periphery of goods rather than using sheets, such as paper, as conventional interleaving paper, a defect of the conventional technology is canceled and an auxiliary implement for a package suitable for storage, transportation, and handling of thin weak goods and a package object are offered -- it is a thing.

[0010] Qualitatively of thin, invention of claim 1 vacates a gap, piles up weak plates, it is for keeping, conveying and handling, and is the sheet-like object of the shape of a frame with narrow width of face which consisted of rigid materials, and relates to an auxiliary implement for a package which has a configuration of a periphery of said plate.

[0011] Invention of claim 2 relates to an auxiliary implement for a package which consists of two or more sheet-like objects which divided a peripheral shape of a plate in claim 1.

[0012] In claim 1, since invention of claim 3 covers each appearance of two or more plates put in order by plane, it relates to an auxiliary implement for a package which has a configuration where a sheet of a peripheral shape of said plate stood in a row in a plane.

[0013] Invention of claim 4 relates to an auxiliary implement for a package which has a slot for fixing said plate to a wall of said sheet-like object in claim 1.

[0014] In claim 1, invention of claim 5 has a sheet-like object larger than said plate, and relates to an auxiliary implement for a package with which an outside approach portion of the upper surface of said sheet-like object is a high level difference portion from a part for inside approach.

[0015] Invention of claim 6 has a part for a downward lobe in inside approach of an inferior surface of tongue of said sheet-like object in claim 5, and it is related with an auxiliary implement for a package located inside the aforementioned high level difference portion by the amount of said lobe.

[0016] On an auxiliary implement for a package of either claim 1 - claim 6, said plate piles up the number of necessity sheets, and is being fixed by fixed means in the whole through said auxiliary implement for a package, and invention of claim 7 relates to a package object characterized by carrying out a seal package further.

[0017] After fixing the whole with a fixed means if needed, a polymer set [plate / said] in a necessity number-of-sheets pile through said auxiliary implement for a package on an auxiliary implement for a package of either claim 1 - claim 6 invention of claim 8 It is contained by case where it has a partition or a slot equivalent to thickness of said polymer, and is related with a package object further characterized by carrying out the seal package of the whole.

[0018]

[Embodiment of the Invention] Drawing 1 shows the typical example of the auxiliary implement for a package of this invention, and 1 of drawing 1 (a) is the plate set as the object of a package, for example, the product made with the thin glass plate. 2 of drawing 1 (b) is the auxiliary implement for a package of this invention, has the same dimension as a plate 1, and is formed in the form of the periphery of a plate 1 band-like. Drawing 1 (c) is drawing showing the condition of having piled up the plate 1 using the auxiliary implement 2 for a package, and arranges and accumulates an edge in this way. The number of sheets which piles up a plate 1 considers the reinforcement of a plate 1, and the facilities in the case of being used after accumulating in this way, and should just determine them suitably. Moreover, when a next package etc. is taken into consideration, as for the top portion and the bottom portion, it is desirable to consider as the auxiliary implement 2 for a package. Since drawing 2 also has a circular plate when it is the example which changed the form of the auxiliary implement 2 for a package and a wafer etc. is considered, the appearance is made circular for the auxiliary implement 2 for a package in that case.

[0019] It may be desirable to make the auxiliary implement 2 for a package into the configuration doubled with the configuration of the accumulated plate 1, and it may not be the same at all and you may merely be the approximation-configuration where some details were omitted. In order for the force to be distributed by the both sides of a plate 1 and the auxiliary implement 2 for a package and for the magnitude of the auxiliary

implement 2 for a package to join them even if the force is added from width when it puts if it is desirable that it is the same as a plate 1 and it is the same, it is hard to produce gap from the accumulated condition. However, if the auxiliary implement 2 for a package is made slightly larger than a plate 1, since it will be the auxiliary implement 2 for a package that external force is added first, damage on a plate 1 can prevent some. On the contrary, if the auxiliary implement 2 for a package makes it more smallish than a plate 1, damage on a plate 1 will tend to break out. Therefore, as for the auxiliary implement 2 for a package, it is desirable that it is the configuration which always has a periphery outside rather than the periphery [a little] of a plate 1 the same [as a plate 1] or larger. In addition, since the auxiliary implement 2 for a package had floated by the thickness of a plate 1 in the portion which has not sandwiched the plate 1 when the auxiliary implement 2 for a package was extremely larger, although it put, since surrounding rigidity falls, it is not desirable. When a pile puts the auxiliary implement 2 for a package, and a plate 1 on ***** generally, less than about 30% of the magnitude of a plate 1 of the width of face of the portion which the auxiliary implement 2 for a package has protruded is desirable.

[0020] Drawing 3 is the auxiliary implement 2 for a package in the case of arranging the goods to accumulate in one plane [four], and the location shown by the drawing 3 middle point line is a location on which a plate 1 is put. Therefore, the thing of the configuration where the auxiliary implement 2 for a package also met the periphery of a plate 1 serves as a configuration which stood in a row two [at a time] in the plane in all directions. If it merely arranges that the auxiliary implement 2 for a package is the same magnitude as a plate 1, since plate 1 will contact and they will become the cause to damage, plate 1 vacate ***** and they can place some. A dotted line shows the location on which a plate 1 is put among drawing 3 . The above may be instantiation of the appearance of the auxiliary implement 2 for a package, and, in short, may be polygons, such as hexagons other than a quadrangle, and an octagon, circular, an ellipse form, or a configuration the outside of it that what is necessary is just to have the configuration of the periphery of a plate 1.

[0021] The auxiliary implement 2 for a package shown in drawing 4 consists the thing of the configuration of the auxiliary implement 2 for a package of drawing 1 (b) of two sheet-like objects of the surface and the lower side which cut in the center mostly and divided the peripheral shape of a plate 1. When it does in this way, in case it puts on a narrow part, it is easy to place, and if it says in this example, the advantage which can be somewhat used also for the plate 1 of a long size is in a longitudinal direction. Furthermore, each may be divided equally and quadrisected or the thing of the configuration of the auxiliary implement 2 for a package of drawing 1 (b) may be divided into the other number. However, since the activity of a pile becomes complicated even if it divides into not much many numbers, about four are 2 thru/or the realistic number of partitions.

[0022] Although drawing 5 – drawing 8 resemble on the drawing the relation of the slot and plate 1 in a core box plastics case with a slot which are used on the occasion of conventional storage, transportation, and handling, they give the function of the slot which fixes a plate 1 to every one of each auxiliary implement 2 for a package. Therefore, the configuration of each auxiliary implement 2 for a package and the configuration of a plate 1 may have the shape of a plan type equivalent to what was explained using drawing 1 – drawing 4 . The auxiliary implement 2 for a package shown in drawing 5 has the slot 3 equivalent to the thickness of a plate 1 in the wall of the auxiliary frame-like implement 2 for a package, and can hold a plate 1. Although the size of the thickness direction which can hold a plate 1 is drawn on the slot 3 or the stage of the lower one almost equally to the thickness of a plate 1 in drawing 5 – drawing 7 , in fact, some additional coverage is given in the thickness direction of a plate 1, and it is as good for it as **. The thing of this drawing 5 consists of two portions which serve as a configuration of the target plate 1 isomorphism-like mostly, as shown in drawing 4 .

[0023] The outside approach portion of the upper surface of the auxiliary implement 2 for a package is high, and is a portion with a level difference from a part for inside approach, a level difference is almost equal to the thickness of a plate 1, or serves as a large size a little, and what is shown in drawing 6 puts a plate 1 on the lower one. Therefore, the appearance of the low portion of a stage is equal to the appearance of a plate 1, or serves as a large size a little. if the auxiliary implement 2 for a package of drawing 6 is used -- the field where the upper surface of a plate 1 and the upper surface of the auxiliary implement 2 for a package are almost the same -- that is, since it becomes a plane mostly, it is easy to pile up up and down.

[0024] The auxiliary implement 2 for a package shown in drawing 7 is corrected like the auxiliary implement 2 for a package shown in drawing 6 . When being made so that a level difference may exceed the thickness of a plate 1 clearly, it has a part for the downward lobe 7 in inside approach at the bottom. The appearance for the lobe Since it is equal to the appearance of a stage with the lower upper surface or smallish a little, It is placed at the edge of the plate 1 with which a part for the lobe of the upper auxiliary implement 2 for a package was put on

the portion to which the lower auxiliary implement 2 for a package is low, and two up-and-down auxiliary implements 2 for a package are fixed mutually, and a plate 1 is inserted and fixed between them. Although it is not fixed in strict semantics when the size is made by slight looseness, the up-and-down auxiliary implement 2 for a package opens the through tube 8 in the location where the edge of all the auxiliary implements 2 for a package is the same, and can also fix it closely by making the combination of a bolt and a nut or the combination of a plastic tube and a thing like the rivet made from plastics which fixes pipe both ends, and the fastener of ** penetrate. In the auxiliary implement 2 for a package of drawing 5 – drawing 7, and the auxiliary implement 2 for a package of drawing 8, a through tube is prepared similarly, and mutual immobilization of auxiliary implement 2 for a package can be performed. In addition, although it is also possible to produce a size more greatly and to fix in the periphery section similarly with the auxiliary implement 2 for a package of drawing 1 – drawing 4, since a gap has auxiliary implement 2 for a package by the thickness of a plate 1, it is good to carry out the laminating of the thing of the thickness which PESA of the thickness of the part is made to intervene, or is equivalent to a spacer to the periphery section of the auxiliary implement 2 for a package.

[0025] Drawing 8 may be the example which made the inside of a slot the shape of a curved surface, and although the cross section has become a part of ellipse form in drawing 8, they may be other configurations. There are very few parts where a plate 1 and the auxiliary implement 2 for a package contact, and they can be managed with the thing of this drawing 8. In addition, like what is shown in drawing 5, the auxiliary implement 2 for a package of this drawing 8 covers the configuration of the target plate 1 in at least two portions, as shown in drawing 4.

[0026] Drawing 9 uses several auxiliary implements 2 for a package, uses that thickness and reinforcement of the polymer 9 of drawing 9 (a) piled up and obtained on both sides of a plate 1 between them increase compared with the plate per sheet, and shows the example contained in the case 10 where it has the partition or slot which is several sheet unit and shows a plate 1 to drawing 9 (b).

[0027] Although a plate 1 bends somewhat, unless it needs the thickness of the degree which can maintain the gap of the degree which does not contact mutually and external force also with going too far self is added, the thickness of the auxiliary implement 2 for a package which was described above has sufficient rigidity, and it bends easily or it has the rigidity of the degree not deforming. As a material of the auxiliary implement 2 for a package, it may be easy to be the thing of arbitration, such as the paper board, a sheet plastic, a metal plate, and a ceramic board, and what was combined suitably may be used.

[0028] As plastics which constitutes a sheet plastic Polyethylene resin, polypropylene resin, poly methyl pentene resin, Polyvinyl chloride resin, polyvinylidene chloride resin, polyvinyl alcohol resin, Vinyl chloride-vinyl acetate copolymerization resin, ethylene-vinyl acetate copolymerization resin, Ethylene-vinyl alcohol copolymerization resin, polyethylene terephthalate resin, Polybutyrene terephthalate resin, polyethylenenaphthalate-isophthalate copolymerization resin, Polymethyl-methacrylate resin, polymethacrylic acid ethyl resin, polyacrylic acid butyl resin, There may be the polyamide resin represented with nylon 6 or Nylon 66, cellulose-triacetate resin, cellophane, polystyrene resin, polycarbonate resin, polyarylate resin, or polyimide resin, and these foam is sufficient. In addition, the case 8 at the time of quoting and explaining drawing 9 is also good to constitute from above-mentioned plastics.

[0029] As a metal plate, they are aluminum, brass, tin, iron, stainless steel, or copper. It may often be used, performing plating etc.

[0030] A thing desirable in the above-mentioned material is the foaming sheet plastic which it was the paper board or a sheet plastic, was desirable at the point which dust does not generate as for the sheet plastic, and was equipped with cushioning properties especially, for example, a polyethylene foam sheet, (for example, the Sekisui Chemical Co., Ltd. make, especially a trade name "EFUTORON", etc. are desirable.). Moreover, as thickness of the auxiliary implement 2 for a package, although piled to the structure of the thickness and magnitude of a plate 1, and the auxiliary implement 2 for a package, it is about 0.1–5mm generally. In addition, the gap of a partition of the case 9 shown in drawing 9 or the width of face of a slot is 1mm – about 10cm.

[0031] In case the auxiliary implement 2 for a package of this invention piles up a plate 1, it is infixed between them. it is dealt with by the optical-related components, the electronic parts, the food, medicine, and biotechnology relation which were mentioned as a plate 1 on the occasion of explanation of the conventional technology — there are various kinds of plates. Thickness is applicable also to an about several mm thing from several micrometers by the but thin variously thing with goods. Moreover, although magnitude is also various, about several 100cm thing is sufficient as this one from several mm. It is fixed to the slot of the auxiliary implement 2 for a package by necessity, and these plates 1 are accumulated through the auxiliary implement 2

for a package, and they are piled up so that it may become proper number of sheets. Then, with adhesive tape, such as a bolt and a nut, etc., after being more closely fixed depending on the case, the whole is packed up with a flexible sheet, a bag, etc., and it seals by the heat seal, an adhesive tape stop, etc., circulation of the open air is intercepted as much as possible, vacuum length of the interior is carried out if needed, or opening replaces that with inert gas, such as nitrogen, and makes it a package object. Or a drying agent and a deoxidant may be enclosed. The polymer 9 of drawing 9 (a) as well as the above is fixed closely if needed, you may pack up and seal, and as shown in drawing 9 (b), after containing in a case, both may be performed, although it can also pack up and seal and packing of a polymer 9, seal, packing of the whole case of drawing 9 (b), and seal may perform either. It is the semantics which prevents destruction according to electrification in preventing adhesion of dust **** as the flexible sheet used for a package, a bag, etc., and it is desirable to use things which took antistatic measures, such as what has conductivity.

[0032]

[Effect of the Invention] According to invention of claim 1, by weak plates contacting the auxiliary implement for a package only into a periphery portion qualitatively of thin, a gap can be vacated, plates can be piled up and prevention of protection from the external force of the plate under storage and transportation / handling and contamination by contact is attained. Moreover, if compared with containing in the case of a core box, storage, transportation, and handling can be performed with a compact gestalt.

[0033] When according to invention of claim 2 it is easy to do an activity and a slot has the auxiliary implement 2 for a package inside also in case a plate and the auxiliary implement for a package are put on a narrow portion since the auxiliary implement for a package is divided, the activity which fits a plate over a slot is easy.

[0034] According to invention of claim 3, it can be common in the auxiliary implement for a package, and two or more plates can be used, and can be accumulated on coincidence.

[0035] Since a plate can be dealt with without according to invention of claim 4 being able to fix a plate to the slot inside the auxiliary implement for a package, being able to perform more positive immobilization, and moving a plate in parallel with a slot, the possibility of damage on a plate is low.

[0036] According to invention of claim 5, since a plate can be put on the stage of the lower one, maintenance of the plate by the auxiliary implement 2 for a package can be performed more certainly.

[0037] According to invention of claim 6, in addition to the effect of the invention of claim 5, loose immobilization of the up-and-down auxiliary implement for a package can be performed.

[0038] invention of claim 7 -- getting twisted -- the auxiliary implement for a package of either claim 1 - claim 6 is used, it certainly fixes, and safety and the engine performance which storage, transportation, and handling are easy, and is needed for a plate in the unopened condition are maintained for a thin and weak plate, and damage and contamination can be prevented.

[0039] Since according to invention of claim 8 the plate of several sheets piled up using the auxiliary implement for a package of either claim 1 - claim 6 is made into an unit and manual receipt is carried out at a case with a partition or a slot More, it can more certainly fix, and safety and the engine performance which storage, transportation, and handling are more easy, and is needed for a plate in the unopened condition are maintained for a thin and weak plate, and damage and contamination can be prevented. Moreover, since this kind of case is used in the electronic-parts field, the magnitude of the auxiliary implement for a package can be adjusted and the case for the electronic parts of a ready-made article can also be diverted.

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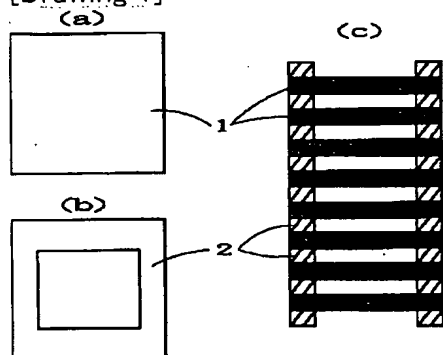
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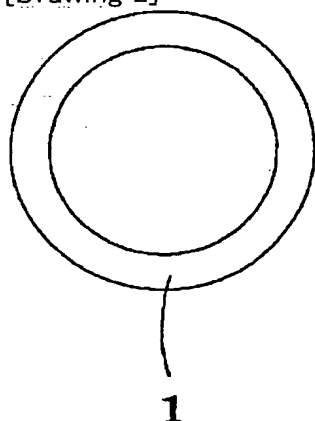
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DRAWINGS

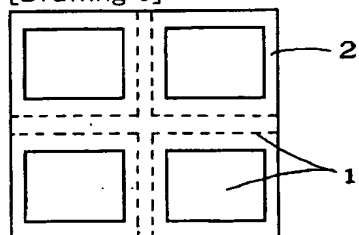
[Drawing 1]



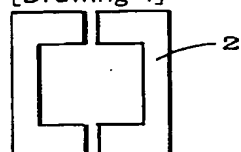
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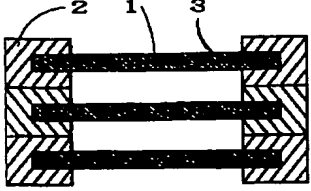
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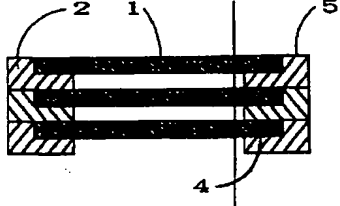
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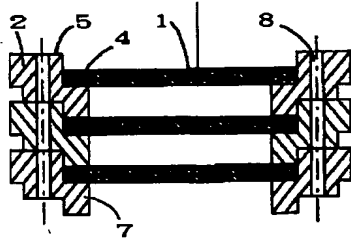
[Drawing 5]



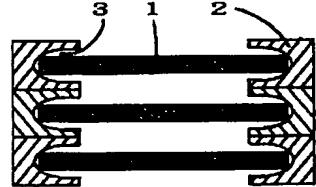
[Drawing 6]



[Drawing 7]

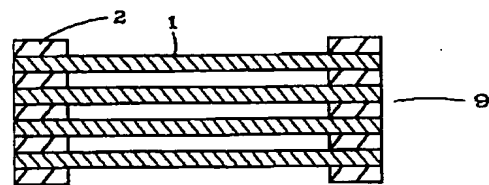


[Drawing 8]

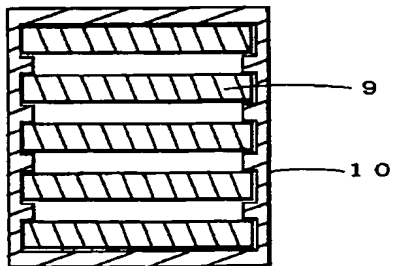


[Drawing 9]

(a)



(b)



[Translation done.]

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(12) 公開特許公報 (A)

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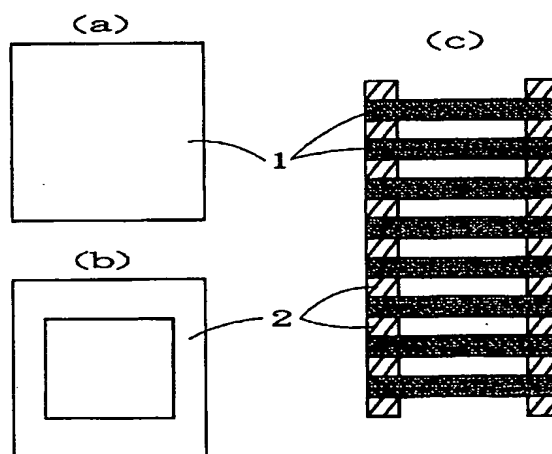
最終頁に続く

(54) 【発明の名称】 包装用補助具および包装体

(57) 【要約】

【課題】 薄くてもろい板状体を保管・輸送・ハンドリングする際に、溝付きのケースへの直接の収納では板状体が損傷しやすく、合紙を使用すると面全体に触れる必要がある欠点を解消する。

【解決手段】 シート状物を、積み重ねる板状体1の外形に合わせ、その周縁部分のみを残して打ち抜いた形状に作製した包装用補助具2を交互に重ねて積層する。包装用補助具2は内壁に溝があるものや、上面の内側が低くなっていて、板状体1が固定されるようにもできる。



【特許請求の範囲】

【請求項1】 薄質で脆い板状体どうしを間隔を空けて重ね、保管・輸送・ハンドリングするためのものであって、剛性の素材で構成された幅の狭い枠状のシート状物であり、前記板状体の周縁の形状を有する包装用補助具。

【請求項2】 前記板状体の周縁形状を分割した複数のシート状物からなる請求項1の包装用補助具。

【請求項3】 平面状に並べられた複数の板状体の各々の外形をカバーするため、前記板状体の周縁形状のシートが平面状に連なった形状を有する請求項1の包装用補助具。

【請求項4】 前記シート状物の内壁に前記板状体を固定するための溝を有する請求項1の包装用補助具。

【請求項5】 前記シート状物が前記板状体よりも大きめであり、前記シート状物の上面の外側寄り部分が内側寄り分よりも高い段差部分となっている請求項1の包装用補助具。

【請求項6】 前記シート状物の下面の内側寄りに下向きの突出部分を有しており、前記突出部分は前記の高い段差部分よりも内側に位置する請求項5の包装用補助具。

【請求項7】 請求項1～請求項6のいずれかの包装用補助具上に、前記板状体が前記包装用補助具を介して必要枚数重ね合わせられ、全体を固定手段により固定されており、さらに、全体を密封包装されたことを特徴とする包装体。

【請求項8】 請求項1～請求項6のいずれかの包装用補助具上に、前記板状体が前記包装用補助具を介して必要枚数重ね合わせられた重合体が、必要に応じ全体を固定手段により固定された上で、前記重合体の厚みに相当する仕切りまたは溝を有するケースに収納されており、さらに、全体を密封包装されたことを特徴とする包装体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、板状体の保管・輸送・ハンドリング時に、板状体を互いに接触させないようにして重ねるための補助具に関する。

【0002】

【従来の技術】物品の生産や検査等の工程を行なう際の物品のハンドリング時や、多量の物品を保管したり、輸送する際に、同一形状のものを多量に扱う必要性は、産業上、しばしば起こる。このような場合、予想される支障が無い限りは、物品をそのまま重ねる事が多い。このため、工業的に生産されるものは、例えば、紙カップや包装用トレイのように、予め積み重ねが容易になるよう、側面を逆テーパ状（下すぼまり）に作製しておき、積み重ねている。

【0003】しかしながら、積み重ねが容易な形状であ

っても、積み重ねるとまずい場合もある。例えば、表面に印刷や塗料の塗布がなされ、乾いていないものはそのままでは重ねられない。このため、一般のオフセット印刷では、澱粉を散布して互いに接着するのを防止し、シルクスクリーン印刷では、簀の子の上に置いて重ねる「簀の子取り」の方法を採っている。ただ、これらの場合、印刷した面や塗装した面は触れないが、反対側を触れることは差し支えないので、支障のない側に触れることで、解決を図っている。

【0004】上記したようなケースとは異なり、表側へも裏側へも接触を避けるべき分野がある。例えば、ガラス、レンズ、写真用フィルター、写真用乾板、又は写真用フィルムなどの光学関係の部品、もしくは、シリコンウェハー、フォトマスクブランケット、フォトマスク、又は液晶ディスプレイ用の配向面等の電子部品においては、触れると汚染、又は表面の微細な損傷が生じ、それらの部品の性能を低下させる。また、食品関係においても、製造後の食品に触れることは、腐敗や食中毒の原因となる細菌の付着、増殖を招き、医療やバイオテクノロジー関係においても、同様である。

【0005】汚染、微細な損傷、細菌の付着・増殖といった問題以外に、物体自身が壊れやすいものであり、積み重ねに特別な注意を要する場合がある。若干重複するが、ごく薄いガラスを使用した製品、食品の中では、煎餅、チョコレート、又は飴等のごく薄いもの、乾燥した湯葉、麩を焼いたもの、又は最中の皮等がある。これらについては、両面共触れないようにする事と、偏った力が加わらないような配慮が必要である。従来、このようなものの保管・輸送・ハンドリングに際しては、溝付きの箱型プラスチックケースが使用されており、箱型のケースの両方の壁に、収納すべき物品の厚みに相当する溝を形成しておき、この溝に箱の開口部から板状の物品を差し込み、必要な時に1個ずつ取り出す方法が取られていた。しかし、差し込み、取り出しの際に損傷しやすい上、差し込み、取り出しを容易にするため、溝の寸法が物品の厚みにくらべて大きく設定されているので、溝内にあっても、輸送時等に物品が溝の中で動いてしまい、溝との摩擦や衝突による物品の損傷が避けられない。

【0006】これとは別に、カラスライドフィルムをスライド投影機にかける際に、各駒をスライドマウントと呼ばれる、紙製又はプラスチック製の枠に挟んで使用する例もある。しかし、周囲に厚みのある枠が、取り外しは可能なものの、ほぼ固定的に取り付けられるため、更に加工を行なう等の場合には、適用が難しい。

【0007】あるいは、薄い柔らかい紙を「台紙」（あいし）として使用し、台紙と物品とを交互に重ねる方法もあり、物品の固定の観点では問題が少ないが、物品の両面のしかも全面に触れる事による支障が避けられない。

【0008】

【発明が解決しようとする課題】本発明は、従来の溝付きの箱型ケースを使用する際の物品の損傷、合紙を使用することを想定した場合に、物品の両面の全面に触れることによる支障を回避することを課題とするものである。

【0009】

【課題を解決するための手段】本発明においては、紙などのシートを従来の合紙として使用するのではなく、物品の周縁にのみ適用することにより、従来技術の欠点を解消し、薄くもろい物品の保管・輸送・ハンドリングに適した包装用補助具、及び包装体を提供するものである。

【0010】請求項1の発明は、薄質で脆い板状体どうしを間隔を空けて重ね、保管・輸送・ハンドリングするためのものであって、剛性の素材で構成された幅の狭い枠状のシート状物であり、前記板状体の周縁の形状を有する包装用補助具に関するものである。

【0011】請求項2の発明は、請求項1において、板状体の周縁形状を分割した複数のシート状物からなる包装用補助具に関するものである。

【0012】請求項3の発明は、請求項1において、平面状に並べられた複数の板状体の各々の外形をカバーするため、前記板状体の周縁形状のシートが平面状に連なった形状を有する包装用補助具に関するものである。

【0013】請求項4の発明は、請求項1において、前記シート状物の内壁に前記板状体を固定するための溝を有する包装用補助具に関するものである。

【0014】請求項5の発明は、請求項1において、シート状物が前記板状体よりも大きめであり、前記シート状物の上面の外側寄り部分が内側寄り分よりも高い段差部分となっている包装用補助具に関するものである。

【0015】請求項6の発明は、請求項5において、前記シート状物の下面の内側寄りに下向きの突出部分を有しており、前記突出部分は前記の高い段差部分よりも内側に位置する包装用補助具に関するものである。

【0016】請求項7の発明は、請求項1～請求項6のいずれかの包装用補助具上に、前記板状体が前記包装用補助具を介して、必要枚数重ねられ、全体を固定手段により固定されており、さらに、密封包装されたことを特徴とする包装体に関するものである。

【0017】請求項8の発明は、請求項1～請求項6のいずれかの包装用補助具上に、前記板状体が前記包装用補助具を介して必要枚数重ね合わせられた重台体が、必要に応じ全体を固定手段により固定された上で、前記重台体の厚みに相当する仕切りまたは溝を有するケースに収納されており、さらに、全体を密封包装されたことを特徴とする包装体に関するものである。

【0018】

【発明の実施の形態】図1は本発明の包装用補助具の典型的な例を示すもので、図1(a)の1は包装の対象と

なる板状体、例えば薄いガラス板でできた製品である。図1(b)の2は本発明の包装用補助具であり、板状体1と同じ外形寸法を持ち、板状体1の周縁の形に帯状に形成されたものである。図1(c)は、板状体1を包装用補助具2を使用して重ねた状態を示す図で、このように、端を揃えて積み上げる。板状体1を重ねる枚数は、板状体1の強度や、このように積み上げた後に使用される場合の便利さを考えて、適宜に決めればよい。又、最も上の部分と最も下の部分は、後の包装等を考慮すると包装用補助具2としておく事が好ましい。図2は包装用補助具2の形を変えた例で、ウェハー等を考えた場合に、円形の板状体もあるので、その場合には、包装用補助具2を外形を円形としておく。

【0019】包装用補助具2は、積み重ねた板状体1の形状に合わせた形状とする事が好ましく、ただ、全く同一ではなく、ディテールを多少省略した近似的な形状であってもよい。包装用補助具2の大きさは、板状体1と同じであることが好ましく、同じであれば、積み重ねた際に、横から力が加わったとしても、板状体1、及び包装用補助具2の双方に力が分散されて加わるため、積み重ねた状態からのズレが生じにくいためである。ただ、包装用補助具2を板状体1よりも大きめにしておけば、最初に外力が加わるのは包装用補助具2であるので、板状体1の損傷が多少防止できる。逆に、包装用補助具2が板状体1よりも小さめにしておくと、板状体1の損傷が起きやすい。従って、包装用補助具2は板状体1と同じか、又は若干大きめの、板状体1の周縁よりも常に外側に周縁を持つような形状である事が好ましい。なお、極端に包装用補助具2の方が大きいと、板状体1を挟んでいない部分では包装用補助具2が板状体1の厚み分だけ浮いているので、積み重ねたものの周囲の剛性が低下するので好ましくない。一概には言いにくい、包装用補助具2と板状体1を重ねた際に、包装用補助具2がはみ出している部分の幅は、板状体1の大きさの30%程度未満が好ましい。

【0020】図3は、積み重ねる物品を1平面に4つ並べる場合の包装用補助具2であり、図3中点線で示す位置が板状体1が置かれる位置である。従って、包装用補助具2も板状体1の周縁に沿った形状のものが、縦横に2つずつ平面状に連なった形状となっている。包装用補助具2が板状体1と同じ大きさであると、ただ並べると、板状体1どうしが接触し、損傷する原因となるので、多少、板状体1どうしが間隔を空けて置けるようになっている。図3中、点線は板状体1を置く位置を示す。以上は、包装用補助具2の外形の例示であって、要は、板状体1の周縁の形状を有していればよく、四角形以外の六角形、八角形等の多角形、円形、楕円形、又はその外の形状であってもよい。

【0021】図4に示す包装用補助具2は、図1(b)の包装用補助具2の形状のものを、上辺、及び下辺のほ

ば中央で切断し、板状体1の周縁形状を分割した2つのシート状物からなるものである。このようにすると、狭い箇所に置く際に置きやすいし、また、この例で言えば左右方向に多少長い寸法の板状体1にも使用できる利点がある。更に、各々を等分して4分割したり、あるいは、図1(b)の包装用補助具2の形状のものを、それ以外の数に分割してもよい。ただ、あまり多くの数に分割しても、積み重ねの作業が煩雑になるので、2ないし4程度が現実的な分割数である。

【0022】図5～図8は、従来の保管・輸送・ハンドリングに際して使用されている、溝付きの箱型プラスチックケースにおける溝と板状体1との関係に、図面上、似ているが、各々の包装用補助具2の1個ずつに、板状体1を固定する溝の機能を持たせたものである。従って、個々の包装用補助具2の形状、板状体1の形状は、図1～図4を使用して説明したものと同等の平面形状であり得る。図5に示す包装用補助具2は、枠状の包装用補助具2の内壁に板状体1の厚みに相当する溝3を有していて、板状体1を保持できる。図5～図7では、溝3や低い方の段に板状体1を保持できる厚み方向の寸法が板状体1の厚みとほぼ等しく描いてあるが、実際には、板状体1の厚み方向に多少の余裕を持たせてくるとよい。この図5のものは、図4に示すように、対象となる板状体1の形状とほぼ同形状になる2つの部分からなっている。

【0023】図6に示すものは、包装用補助具2の上面の外側寄り部分が内側寄り分よりも高く、段差を有した部分となっており、段差がほぼ板状体1の厚みと等しいか、若干大きい寸法となっていて、低い方に板状体1を置くようになっている。従って、低い段の部分の外形が、板状体1の外形と等しいか、若干、大きい寸法となっている。図6の包装用補助具2を使用すると、板状体1の上面と、包装用補助具2の上面とはほぼ同一の面、即ち、ほぼ平面となるので、上下に重ねやすい。

【0024】図7に示す包装用補助具2は、図6に示す包装用補助具2と同様、ただし、段差が板状体1の厚みを明らかに上回るよう作られている上、下面の内側寄りに下向きの突出部分7を有しており、その突出部分の外形は、上面の低い方の段の外形と等しいか、若干小さめとなっているため、上の包装用補助具2の突出部分が下の包装用補助具2の低くなっている部分に置かれた板状体1の端に置かれて、上下の2つの包装用補助具2が互いに固定され、かつ、その間に板状体1が挟まれて固定される。上下の包装用補助具2は寸法がゆめめに作られている場合には、厳密な意味では固定されないが、すべての包装用補助具2の端部の同じ位置に貫通孔8を開けておき、ボルトおよびナットの組み合わせ、又はプラスチックパイプとパイプ両端を固定するプラスチック製のリベットのようなものとの組み合わせ、等の固定具を貫通させる事により、緊密に固定することもできる。図5

～図7の包装用補助具2、及び図8の包装用補助具2においても同様に貫通孔を設けて包装用補助具2どうしの互いの固定ができる。なお、図1～図4の包装用補助具2でも、寸法を大きめに作製し、同様にして周縁部で固定することも可能であるが、包装用補助具2どうしが板状体1の厚み分だけ、間隔があるため、その分の厚みのベサを介在させるか、スペーサに相当する厚みのものを包装用補助具2の周縁部に積層しておくともよい。

【0025】図8は、溝の内面を曲面状にした例で、図8では断面が楕円形の一部となっているが、他の形状であってもよい。この図8のものでは、板状体1と包装用補助具2の接触する箇所がごく少なくて済む。なお、この図8の包装用補助具2は、図5に示すものと同様、図4に示すように、対象となる板状体1の形状を少なくとも2つの部分でカバーする。

【0026】図9は、包装用補助具2を数枚使用し、その間に板状体1を挟んで重ね合わせられて得られる図9(a)の重合体9が、1枚ずつの板状体にくらべて、厚みと強度が増すことを利用し、板状体1を数枚単位で、図9(b)に示す仕切りまたは溝を有するケース10に収納した例を示す。

【0027】上記したような包装用補助具2の厚みは、板状体1が多少たわんでも、互いに接触しない程度の間隔を維持できる程度の厚みを必要とし、また、自身も極端な外力が加わらない限り、充分な剛性を有し、容易に折れ曲がったり、変形しない程度の剛性を有するものである。包装用補助具2の素材としては、板紙、プラスチックシート、金属板、セラミック板等の任意のものでよく、適宜に組み合わせたものでもよい。

【0028】プラスチックシートを構成するプラスチックとしては、ポリエチレン樹脂、ポリプロピレン樹脂、ポリメチルペンテン樹脂、ポリ塩化ビニル樹脂、ポリ塩化ビニリデン樹脂、ポリビニルアルコール樹脂、塩化ビニル-酢酸ビニル共重合樹脂、エチレン-酢酸ビニル共重合樹脂、エチレン-ビニルアルコール共重合樹脂、ポリエチレンテレフタレート樹脂、ポリブチレンテレフタレート樹脂、ポリエチレンナフタレート-イソフタレート共重合樹脂、ポリメタクリル酸メチル樹脂、ポリメタクリル酸エチル樹脂、ポリアクリル酸ブチル樹脂、ナイロン6又はナイロン66等で代表されるポリアミド樹脂、三酢酸セルロース樹脂、セロファン、ポリスチレン樹脂、ポリカーボネート樹脂、ポリアリレート樹脂、又はポリイミド樹脂等があり、これらの発泡体でもよい。なお、図9を引用して説明した際のケース8も上記のプラスチックで構成するとよい。

【0029】金属板としては、アルミニウム、真鍮、すず、鉄、ステンレス鋼、又は銅等である。しばしばめっき等を施して使用することがある。

【0030】上記した素材の中で好ましいものは、板紙またはプラスチックシートであり、塵埃が発生しない点

でプラスチックシートが好ましく、中でも、クッション性を備えた発泡プラスチックシート、例えば、発泡ポリエチレンシート（例えば、積水化学（株）製、商品名「エフトロン」等）が特に好ましい。また、包装用補助具2の厚みとしては、板状体1の厚みや大きさ、包装用補助具2の構造にもよるが、概して、0.1～5mm程度である。なお、図9に示すケース9の仕切りの間隔または溝の幅は、1mm～10cm程度である。

【0031】本発明の包装用補助具2は板状体1を重ねる際に、その間に介装される。板状体1としては、従来技術の説明の際に挙げた光学関係の部品、電子部品、食品、医療やバイオテクノロジー関係で取り扱う各種の板状体がある。厚みは、物品によって様々だが、薄いものでは数μmから数mm程度のものにも適用できる。又、大きさも様々だが、こちらの方は数mmから数100cm程度のものでもよい。これら板状体1は必要により包装用補助具2の溝に固定され、包装用補助具2を介して積み重ねられ、適宜な枚数になるよう重ねる。その後、場合によっては、ボルト及びナット等、あるいは粘着テープ等によって、より緊密に固定された後、全体を柔軟なシート、袋等で梱包し、開口部があれば、熱シール、粘着テープ止め等により密封して、外気の流通をできるだけ遮断し、必要に応じて、内部を真空引きするか、又は窒素等の不活性ガスで置換し、包装体とする。あるいは、乾燥剤や脱酸素剤を同封してもよい。図9(a)の重合体9も必要に応じ、上記と同じように緊密に固定し、梱包、密封してあってもよく、図9(b)に示すようにケースに収納した後に、梱包、密封することもでき、重合体9の梱包、密封、図9(b)のケース全体の梱包、密封はいずれか一方を行なってもよいが、両方を行なってもよい。包装に使用する柔軟なシート、袋等としては、塵埃の付着を防止したり、帯電による破壊を防止する意味で、導電性を有するもの等、帯電防止対策を施したものを使用する事が好ましい。

【0032】

【発明の効果】請求項1の発明によれば、薄質で脆い板状体どうしを周縁部分のみに包装用補助具を接触させることにより、板状体どうしを間隔を空けて重ねる事ができ、保管・輸送・ハンドリング中の板状体の外力からの保護と、接触による汚染の防止が可能になる。また、箱型のケースに収納するのにくらべれば、コンパクトな形態で保管・輸送・ハンドリングができる。

【0033】請求項2の発明によれば、包装用補助具が分割してあるので、狭い部分に板状体と包装用補助具を置く際にも作業が行ないやすく、また、包装用補助具2が内側に溝がある場合には、溝に板状体を差し込む作業が容易である。

【0034】請求項3の発明によれば、複数の板状体を包装用補助具を共通で使用して、同時に積み重ねることができる。

【0035】請求項4の発明によれば、板状体を包装用補助具の内側の溝に固定でき、より確実な固定ができ、板状体を溝に平行に移動する事無く、板状体を取り扱えるので、板状体の損傷の可能性が低い。

【0036】請求項5の発明によれば、低い方の段に板状体を置くことができるので、包装用補助具2による板状体の保持がより確実に行える。

【0037】請求項6の発明によれば、請求項5の発明の効果に加え、上下の包装用補助具のゆるやかな固定ができる。

【0038】請求項7の発明によれば、請求項1～請求項6のいずれかの包装用補助具を使用して、薄く、脆い板状体を安全かつ確実に固定し、保管・輸送・ハンドリングが容易で、未開封の状態では、板状体に必要とされる性能を維持し、かつ、損傷や汚染を防止できる。

【0039】請求項8の発明によれば、請求項1～請求項6のいずれかの包装用補助具を使用して重ね合わせられた数枚の板状体を単位とし、仕切りや溝のあるケースに手収納するので、薄く、脆い板状体をより安全かつより確実に固定することができ、保管・輸送・ハンドリングがより容易で、未開封の状態では、板状体に必要とされる性能を維持し、かつ、損傷や汚染を防止できる。また、この種のケースは電子部品分野で使用されているので、包装用補助具の大きさを調整して、既製品の電子部品用のケースを流用することもできる。

【図面の簡単な説明】

【図1】本発明の典型的な実施例を示す図である。

【図2】円形の板状体用の包装用補助具の平面図である。

【図3】多面付けの場合の包装用補助具の平面図である。

【図4】包装用補助具を分割した例を示す平面図である。

【図5】溝付きの包装用補助具の実施例を示す断面図である。

【図6】積み重ねしやすい包装用補助具の実施例を示す断面図である。

【図7】互いに固定可能な包装用補助具の実施例を示す断面図である。

【図8】溝が曲面状の包装用補助具の実施例を示す断面図である。

【図9】ケースに収納した状態を示す断面図である。

【符号の説明】

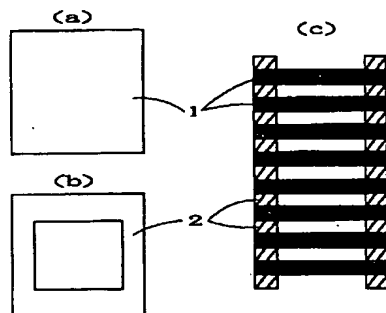
- 1 板状体
- 2 包装用補助具
- 3 溝
- 4 段の低い部分
- 5 段の高い部分
- 6 突出部分
- 7 突出部分

8 貫通孔
9 板状体の重合体

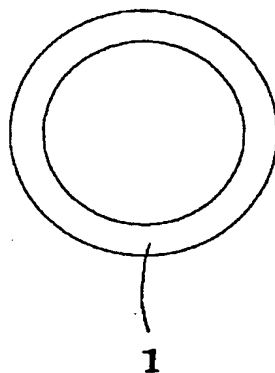
* 10 ケース

*

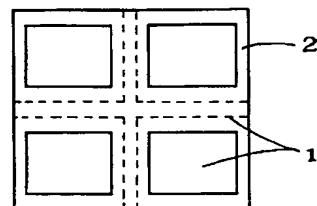
【図1】



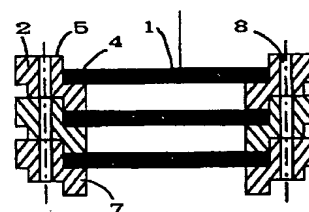
【図2】



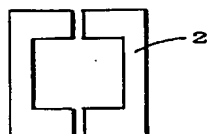
【図3】



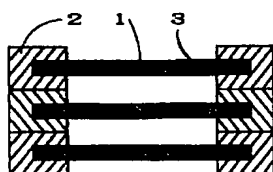
【図7】



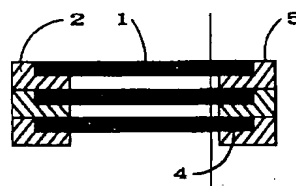
【図4】



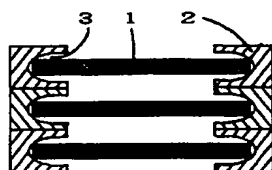
【図5】



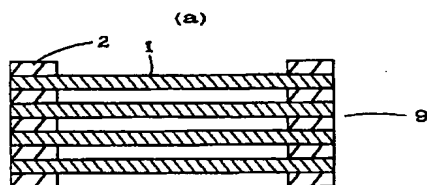
【図6】



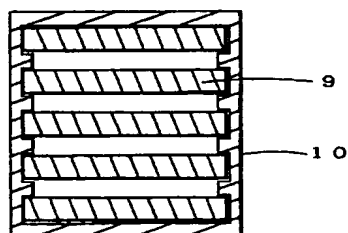
【図8】



【図9】



(b)



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